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Approved For Release 2005/02/17 : CIA-RDP78B04770A001100020015-3

30 November 1965

MEMORANDUM FOR THE RECORD

SUBJECT: Visit [redacted] in Connection with Briefing Print Enlarger

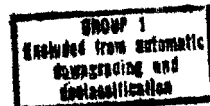
1. The undersigned, [redacted] in concert with [redacted] of P&DS, [redacted] of PSD/PLB, visited the [redacted] on 15 and 16 November 1965 for the purpose of conducting an operational inspection of the "breadboard" Briefing Print Enlarger preparatory to authorizing fabrication of the prototype enlarger. [redacted]

2. Before attempting operation of the Briefing Print Enlarger, we were given a briefing on the status of the development with particular attention being given to the fact that it is currently a "breadboard" designed to prove the principles involved and little or no attempt was made at human factor engineering. It was further pointed out that no consideration was given to appearances in the fabrication of the "breadboard." The dimensions, mass, and weight of the final printer will, however, be approximately the same as that of the "breadboard" and resolution or quality of the prints should be about the same. The breadboard printer is the result of the consolidation of two separate printer efforts, one for 20" X 24" briefing prints with magnifications ranging from 10 to 60 diameters, and the other a fluid gate enlarger, with magnifications ranging from 3 to 15 diameters with up to 40" print size. In development it became apparent that a 3 inch square gate and an overall lens conjugate length range between 50" and 80" would apply to both printers, therefore, a single printer was fabricated. As an introduction to the printer, there was exhibited a series of prints made from the same negative ranging from 3 to 60 magnifications. Although the negative from which these enlargements was made was of only moderate resolution, it was apparent from the rendition of the grain in the prints that the printer does a very good job.

3. A detail inspection was made of the printer and a series of test prints were made on the equipment. [redacted] made enlargements covering the range of the printer, and I made a series of resolution and gray scale tests. The latter are attached hereto. [redacted] has the enlargement or picture tests. In general the printer meets the stated requirements; however, there were a number of points which required some discussion and a decision. They were as follows:

a. The Photometer for determining exposure was inoperative and after extensive discussion it was decided that the method for determination of exposure, (average density over an 8 inch diameter spot, weighted by pre-classification of negative) was not acceptable. The photometer will be removed from the easel and D-min and D-max probes

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(Quanta-Log), not part of the printer will be used in determining exposure.

b. Some more work is required on the lamp and cooling system. With the present lamp, exposure time varies between 2 and 25 seconds and there has been some deformation of the gelatin band pass filters. After considerable discussion on the possible use of some other light source, it was decided to retain the tungsten filament lamp but change to a double filament lamp in an effort to reduce the exposure time. This will require additional heat absorbing glass in the light system.

c. The moveable lamp house which contains the liquid gate requires further work. The volume of fluid injected for each frame is too sparse and sometimes causes air bubbles in the gate. With an increase in the volume of liquid a more effective exhaust system for the fumes will be required.

d. The horizontal and vertical scales to locate the proper coordinates on the film are technically ok, but need some human engineering to make them more accessible to the operator, as the location of the scales is sometimes quite high.

e. The motor drive system used to elevate the film and its transport system for viewing is too slow and also needs limit switches to prevent overrun.

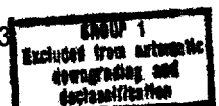
f. There is no provision on the breadboard printer for correction of focus when reversing the emulsion side of the film or for thin base films. In the case of some of the lenses, a correction will be necessary while in others the depth of focus will serve this purpose. It was agreed that a new paper tape for the index cylinder would be computed to meet these requirements.

g. The lenses are currently mounted to the lens board by six thumb screws. When it is considered that a change of condensers is also required for each lens change, this changeover becomes a considerable task. The lens mounts will be fitted with some kind of a registration pin device and a lever clamp, replacing the six thumb screws.

h. There was considerable discussion regarding the vacuum easel. All agreed that it was the best vacuum easel yet seen; but the surface of the easel was made of a translucent plastic material having a matte surface to provide a means for reading the light by a probe behind the easel. This made observation of the image on the easel difficult if not impossible, and in addition resulted in back scatter when printing on film instead of paper. It was agreed that the surface of the easel would be changed, either by painting with a suitable white paint or by replacing the present plastic with a better material.

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4. Although the "breadboard" printer appears to meet all the stated requirements for its development, [ ] would like to add some additional requirements for inclusion in the prototype:

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a. He would like to have filters built in for variable contrast papers limited to only two grades: one low contrast, the other high contrast. It was agreed that so long as this was limited to only two grades this probably could be done by appropriate filters in the present filter wheel or by a replacement filter wheel.

b. He also wanted to extend the magnification from 60X to 160X. This is rather severe and would require at least two more lenses which would have to be designed especially for this equipment and could be expected to cost in the neighborhood of [ ]

25X1

5. Recommendations:

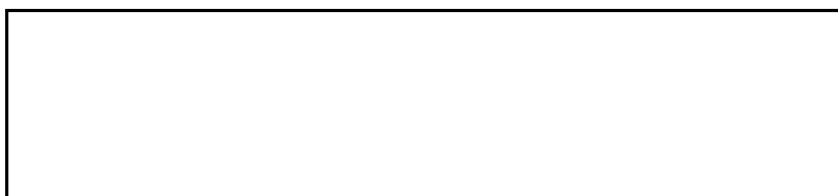
a. Except for some minor improvements such as: injection of solution in the liquid gate, exhaust of fumes, increase in light intensity and cooling, the adaptation of variable contrast filters to the machine, and some redesign of the lamp house mounting, and the development of the "breadboard printer" the first phase of this project is complete.

b. There is attached hereto a copy of PAR 243 for the design and fabrication of a prototype of the briefing print enlarger. I recommend that PAR 243 be approved for an authorized expenditure of [ ] I further recommend that we request [ ] furnish a PAR on the design and development of lenses required to extend the magnification capability of the Briefing Print Enlarger to 160 magnifications.

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